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ABSTRACT

The report identifies important questions typically asked of the vocational education enterprise by legislators. Assuming that Congress provides a national forum for inquiry into the progress of vocational education where evidence from the States is reflected, selected House and Senate committee hearings and reports on education were reviewed to produce a list of representative questions. The questions presented deal with: those served by vocational education, curricula, staff resources, facilities and equipment, costs, and outcomes. These are followed by a 17-page section listing specific questions structured around the following components of a conceptual framework for vocational education: (1) the context (population, employment, education, economic, local government economic, school revenue base, and training resources information); (2) the inputs (revenue and new student information); (3) the process (enrollment, expenditure, program, staff, and site information); (4) the product (completion and withdrawal information); (5) the impact (post-school employment, job satisfaction, employer satisfaction, and school satisfaction information); and (6) the interrelation between the framework components. The report concludes with a brief description of information available through existing management systems and an epilogue stating the limitations of the report's accounting-type questions and the critical importance of answers to interrelated questions in planning. (Author/MS)

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# QUESTIONS IN VOCATIONAL EDUCATION:

## What Everyone Wants To Know, and Is Not Afraid To Ask

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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## THE CENTER

John K. Coster, Director

The Center for Occupational Education at North Carolina State University at Raleigh is a research and development center established in 1965 under the provisions of the Vocational Education Act of 1963. The Center has been established as an integral unit within the School of Education at North Carolina State University, and its major programs are supported by contracts with the National Institute of Education. The Center has as its mission the provision—through research, development, and related activities—of a continuing contribution to the improvement of occupational education. The major research and development programs of the Center focus on the relationship of occupational education to its context or environment. The frame of reference for occupational education includes its relationship to regional economy, politics, and the employment or work environment. In addition to its primary programs, the Center also maintains a Division of Special Service Projects which provides the capability for flexible action within the Center's overall mission. Funding for these projects is not maintained through the Center's federal grant, but, rather, negotiated on a project-by-project basis with contracting agencies.

## CAREER AND VOCATIONAL EDUCATION PROFESSIONAL DEVELOPMENT SERIES

John K. Coster, Series Editor

This series is published by the Center for Occupational Education, North Carolina State University at Raleigh, as a service of the Vocational and Career Education Professional Development Unit, Division of Educational Systems Development, Office of Career Education, Bureau of Occupational and Adult Education, U.S. Office of Education.

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## PREFACE

This report was originally prepared by the Dynamic Analysis and Strategic Planning (DASP) program division of the Center for Occupational Education in response to a request for such information from the U. S. Office of Education. It is reproduced here as a service to vocational education personnel development coordinators across the nation and others who are vitally concerned with the information needs of the country with regard to vocational education.

The Center is indebted to the compilers of this document for making it available for publication. Special thanks are expressed to Mrs. Faye Childers, who did much of the research involved in producing the data contained herein.

John K. Coster
Center Director

# FOREWORD

This report is prepared in answer to an informal request by the U. S. Office of Education to identify some of the more important questions typically asked of the vocational education enterprise. Because Congress provides a national forum for inquiry into the progress of vocational education, and because testimony provided to committees of the Congress reflects specific evidence from the states, we have reviewed selected House and Senate committee hearings on education. Additionally, we have reviewed appointed committee reports which, in our opinion, have altered the course of vocational education. A partial listing of the source documents is presented below.

Vocational Education Act of 1963, Hearings before the General Subcommittee on Education of the Committee on Education and Labor, March and April, 1963.

Education for a Changing World of Work, Report of the Panel of Consultants on Vocational Education, Appendices and Summary, 1963.

Vocational Education Improvement Act Amendments of 1967, Hearing before the General Subcommittee on Education of the Committee on Education and Labor, April, 1967.

Notes and Working Papers Concerning the Administration of Programs Authorized Under the Vocational Education Act of 1963, (Essex Report), March, 1968.

Partnership for Learning and Earning Act of 1968, Hearings before the General Subcommittee on Education of the Committee on Education and Labor, March, 1968.

Vocational Education Amendments of 1968, Hearing before the General Subcommittee on Education of the Committee on Education and Labor, May, 1968.

Testimony Presented to the Subcommittee on Appropriations for HEW and Labor; American Vocational Education Research Association, Dr. Arthur M. Lee, Chairman, Committee on Legislative Information, June, 1969.

Vocational Education Amendments of 1969, Hearing before the General Subcommittee on Education of the Committee on Education and Labor, September, 1969.

Testimony Presented to the Senate Committee on Appropriations, Subcommittee on Education, on behalf of the National Advisory Council on Vocational Education, Hugh Calkins, Chairman, Dr. Calvin Dellefield, Executive Director, December, 1969.

Education Amendments of 1971, Report of the Committee on Labor and Public Welfare, August, 1971.

Reports on the Implementation of the Vocational Education Amendments of 1968, Volumes 1 and 2, General Subcommittee on Education of the Committee on Education and Labor, November, 1973.

Occupational, Vocational and Career Education Hearing before the General Subcommittee on Education of the Committee on Education and Labor, held at Raleigh, North Carolina, April, 1974.

In the case of congressional testimony, we have made an effort to determine the substance of the questions raised by congressmen, since often the actual verbatim questions were foreshortened by reference to evidence already presented or by reference to written testimony. Our review revealed that hundreds of specific questions have been asked in congressional hearings. In order to reduce the questions to manageable size and to eliminate redundancy, we have attempted to formulate a set of questions representative of those most frequently asked in congressional hearings. These questions are listed on the following pages and are categorized by major content area.

However, the questions frequently raised in congressional hearings are sweeping in scope and not amenable to easy answers. In order to facilitate answering these global questions, we have formulated a list of more specific exemplary questions. We believe that these specific questions must be answered first, since answers to the complex global questions are a composite of answers to specific questions.

We have developed and organized these specific questions around a systems-oriented conceptual framework of vocational education. As indicated in Figure 1, this framework consists of (1) the context in which vocational education occurs, (2) the inputs into vocational education, (3) the process by which vocational education staff and facilities are structured and organized into programs to provide services, (4) the product or output of vocational education programs, (5) the impact or result of vocational education, and (6) the interrelation between context, input, process, product and impact. The information content associated with context, input, process, product and impact is presented in Figure 2. The information content required to answer specific questions is indicated in the listing of specific questions.

Finally, we have included a brief review of current data gathering and processing capabilities based on our recent experiences with selected state vocational education information systems. We have attempted to indicate types of information that can be provided by at least one currently operational management information system. We do not claim completeness, since our experience is limited to those systems generally considered to be exemplary of the current state-of-the-art in vocational education management information system development.

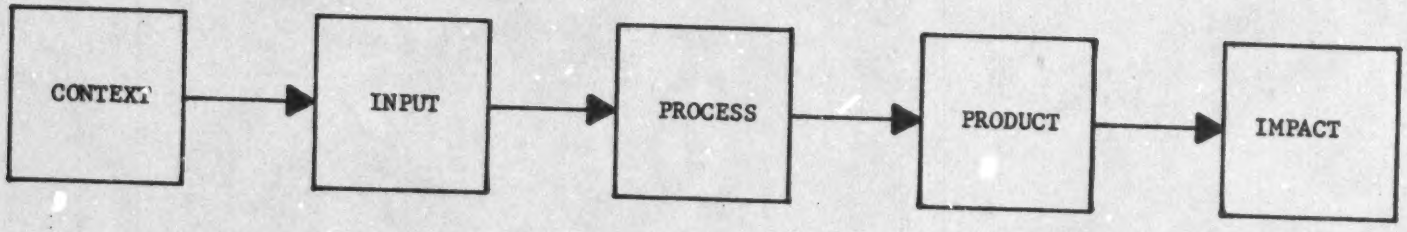


Figure 1. Conceptual Framework

| CONTEXT | INPUT | PROCESS | PRODUCT | IMPACT |
|---|---|---|---|---|
| Population Information | Revenue Information | Enrollment Information | Completion Information | Post-School Employment Information |
| Employment Information | New Student Information | Expenditure Information | Withdrawal Information | Job Satisfaction Information |
| Education Information | | Program Information | | Employer Satisfaction Information |
| Economic Information | | Staff Information | | School Satisfaction Information |
| Local Government Economic Information | | Site Information | | |
| School Revenue Base Information | | | | |
| Training Resources Information | | | | |

Figure 2. Informational Categories Assigned to Components

REPRESENTATIVE QUESTIONS FREQUENTLY ASKED IN CONGRESSIONAL HEARINGS AND COMMITTEE REPORTS

## Those Served by Vocational Education

How many individuals are currently enrolled in vocational education programs? Secondary? Postsecondary? Adult? Disadvantaged? Handicapped? Other?

How many individuals were turned away for lack of space in the training facilities? Because they could not meet the entrance requirements? For lack of funds? Other?

What is the proportion of males to females prepared in vocational curricula to enter the labor force? Has the proportion changed significantly during the last five years?

What steps do vocational educators use to determine the actual number of individuals who desire training and those with special interests?

How is the number of disadvantaged who need training determined? What procedures are used to determine who is disadvantaged and what kinds of training may be needed?

What are the vocational schools doing to search out adults who need retraining, updating and upgrading, and to offer instructional programs to serve these adults?

## Vocational Education Curricula

What procedures are used to determine the need and content of curricula to be offered in the schools?

How are vocational educators modifying curricula in order to reflect the changes in technology?

How are students with special needs being accommodated in vocational education programs? Handicapped? Disadvantaged? Other?

What are the occupational areas which need to receive special emphasis because of emerging employment opportunities?

What percentage of vocational students are involved in cooperative education programs? Innovative programs? Exemplary programs?

What steps are being taken to keep curricula current? Are employers involved in the determination of what should be taught to youth and adults?

What proportion of the time spent in a vocational school by students is devoted to manipulative skills? To technical knowledge? To general education?

Are manpower data and other data that are available from the Bureau of Labor Statistics and the Employment Service Agencies used in determining vocational programs needed, curricula to be offered, as well as those that should be modified and/or terminated?

## Vocational Instruction Staff Resources

From which major sources are vocational instructors obtained? What proportion of the instructors are female? Black? Other?

What in-service opportunities are offered for teachers to keep their skills current? Do they return to industry or business for renewal regularly? Who subsidizes the cost of this training?

What is the usual ratio of vocational students to teachers in the shops and laboratories, supervisory personnel to teachers, guidance or counseling personnel to students, etc?

To what extent is self-paced instruction used in vocational education? What are the costs of this kind of instruction as compared to traditional methods? Who prepares the instruction materials?

Is constant supervision/administration provided for vocational instructors? How is it provided?

Are instructor salaries comparable to salaries in the labor market for similar occupations?

Are day school instructors also involved in evening school instruction? Apprenticeship instruction?

Do instructors make use of advisory committees? To what extent?

## Vocational Education Facilities and Equipment

With the facilities and equipment usually found in high schools, can they prepare youth for the skilled occupations, or can they provide only exploratory experiences?

Does every high school need to have fully equipped vocational facilities? Cannot the students be co-oped with regional employers?

Does the area vocational center adequately meet the needs of youth and adults for vocational preparation and/or re-preparation?

Are vocational education facilities replicated in other institutions in your region? Is it possible that cooperative (joint) use of facilities can be arranged? Can a high school and a technical school use the same facilities?

What does it cost on the average to equip an area vocational center? What part of the total institutional cost is represented by the equipment?

What provisions are made by vocational educators to keep the quality of the equipment current? What part of the annual budget is used for replacing obsolete equipment?

How many additional schools for vocational education do you estimate will be needed in the U. S. during the next five-year period, assuming approximately 500 students per school? In your state? In your region?

Can "surplus" elementary schools be utilized for any phase of vocational and/or career education? How much money is involved in converting a "surplus" elementary school to vocational purposes? Is the procedure feasible?

## Costs of Vocational Education

What is the average cost per year of preparing youth for the labor market, in a high school? In a technical institute?

Is tuition charged in the postsecondary institutions? If not, why not? If so, how is the tuition charge determined?

What is the comparative cost of vocational education to academic education in the high schools and in the technical institutes? How is this difference explained?

How much federal money was derived from vocational acts in your state last year? This year? How much state and local money was expended last year in your state for vocational education?

Has the ratio of federal to state expenditures for vocational education in your state changed during the last five years? How? How is this explained?

Would vocational programs suffer if federal funds were reduced or withdrawn? What would the effect be in service to youth and adults in the states?

To what extent has the so-called "seed money" in the federal vocational acts been used to inaugurate new programs and curricula and to construct facilities for vocational education?

To what extent do states observe the "maintenance of effort" clause in the federal vocational acts? Is any federal money used for the "maintenance" of established programs?

## Vocational Educational Outcomes

What percentage of those who enroll in vocational training curricula actually complete the curriculum? What happens to those who do not complete prescribed curricula?

Of those who complete training, what percentage go into occupations for which training was provided? In allied occupations? What happens to all of the others? Marriage? Military training? Other?

How is the quality of the training offered by vocational education programs actually measured? How do vocational educators know for certain that the training that is being offered is the best alternative, and that the results are the best possible, given the present resources?

What do employers report, and how do employers react to the individuals prepared and graduated from vocational education institutions? What procedures are used to measure the employer reactions to the skills, technical knowledge, and general education of the employees?

What percentage of graduates from secondary-level vocational education curricula actually go on to postsecondary two-year study in technical institutes or community colleges?

How many months after graduation from a vocational curriculum are required for an individual to earn an hourly wage equal to a skilled person's?

What means are used to measure the effectiveness of the technical instruction provided for industrial apprentices? What reactions are regularly obtained from labor, labor unions, employers, and others on the quality of the apprenticeship training provided by the vocational schools?

What information is now available, or should be available, on cost-benefit studies that have been conducted? What action has been taken by vocational educators as the result of such cost-benefit studies?

# A REPRESENTATIVE LIST OF SPECIFIC VOCATIONAL EDUCATION QUESTIONS

## Context

### What Is the Community Need for Vocational Education?

#### Population Information

What is the total population?

What is the percentage annual change in population?

What is the specific population by race, age and sex?

What is the urban (rural) population?

What is the percentage change in urban (rural) population?

What is the annual birth (death) rate?

What is the infant mortality rate?

What is the natural population increase?

What is the annual net migration?

What is the suicide rate?

What is the delinquency rate?

What percentage of families have members under 18 years of age?

What is the percentage of all families with income less than poverty level?

What is the number of families with children under 18 who have family income less than the poverty level?

#### Employment Information

What is the size of the civilian labor force?

What is the size of the civilian labor force by race, sex and age?

What is the labor force participation rate for those 16 years of age and older by race and sex?

What is the total unemployment rate?

What is the unemployment rate for youth 16-21 by race and sex?

What are the characteristics of the unemployed?

What are the average hours and wages by industry?

What is the community employment by occupations?

What is the community employment by industrial groups?

What are the job opportunities by occupations?

What is the percentage change in employment by occupational classifications over a specified number of years?

What are the mobility patterns of the work force?

What are the typical job duties of specific occupations?

What are the characteristics of workers customarily hired in selected occupations?

What are the training and apprenticeship opportunities by industrial classification?

What are the hiring practices of significant employers?

What are the prevailing wage rates for selected occupations?

What are the short-term (long-term) anticipated labor demands (supply) by occupations?

What are the anticipated changes in "typical job duties" and "characteristics of workers customarily hired" for selected occupations?

Educational Information

What is the median years of schooling completed by age, race and sex?

What is the percentage of the population 25 years of age and older who have not graduated from high school?

What is the percentage of the population 25 years of age and older who have completed a program of vocational training by years of school completed and sex?

What is the occupation of all employed persons 16 years of age and older by field of vocational training, age and sex?

What is the percentage of the population who have completed less than fifth grade by sex and race?

What is the public school enrollment by grades?

What is the percentage of annual high school graduates enrolled in community colleges and technical institutes?

What is the number of enrollees in vocational programs per 100 enrollees in community colleges?

Economic Information

What is the per capita income?

What is the total value of bank deposits?

What is the total dollar value of retail sales?

What is the total dollar value of wholesale sales?

What is the capital investment by industrial group?

What Is the Extent of Community Support for Education?

Local Government Economic Information

What is the local government annual revenue by sources?

What are the annual expenditures by expenditure categories?

What is the capital improvement budget?

What are the total property tax rates for specific school purposes?

What is the total revenue from state sources?

What is the total revenue from federal sources?

What is the total revenue received from VEA funds?

School Revenue Base Information

What is the total assessed value of all property subject to taxation?

What is the percentage change in assessed valuation for selected years?

What is the official property assessment ratio?

What is the total property tax levied for schools?

What is the value of the tax-exempt property?

What is the per capita expenditure for public school education from local, state and federal sources?

What were the votes cast in the last three elections for school operating levies?

## What Vocational Training Resources Are Available?

### Training Resources Information

How many training opportunities are available in business and industry?

How many training opportunities are available in civilian government agencies?

How many training opportunities are available in private agencies and organizations?

How many training opportunities are available in military installations?

How many training opportunities are available from prime sponsors under CETA?

## Input

## What Resources Are Allocated to Vocational Education?

### Revenue Information

What is the total revenue from federal sources allocated to vocational education by geographic location, program area, program level and target groups?

What is the total revenue from state sources allocated to vocational education by geographic location, program area, program level and target groups?

What is the total revenue from local sources allocated to vocational education by geographic location, program area, program level and target groups?

What is the source and amount of revenue used to support vocational education by OE instructional programs?

What is the source and amount of revenue used to support vocational education by type of school, e.g., comprehensive high school, area vocational-technical school, or skill center?

What is the amount of revenue from vocational education tuition fees by geographic location, program area, program type and target groups?

What is the amount of restricted (unrestricted) grants-in-aid received directly from the federal government for support of local programs of vocational education by geographic location, program area, program level and target groups?

What is the amount of restricted (unrestricted) grants-in-aid received from the federal government through the states to support local programs of vocational education by geographic location, program area, program level and target groups?

How are state grants-in-aid to vocational education distributed to local educational agencies?

New Student Information

What are the abilities, aptitudes and achievement levels of newly enrolled vocational education students?

What are the reasons for enrolling in vocational education programs?

What are the career expectations and aspirations of newly enrolled vocational education students?

## Process

### Who Is Being Served by Vocational Education?

Enrollment Information

What proportion of those who apply are admitted to vocational programs by geographic location, program level and target group?

How many apply for entrance to vocational education programs by geographic location, program level and target group?

What is the total enrollment in vocational education by geographic location, program area, program level and target group?

What is the total enrollment in vocational education by age, sex, ethnic group, socioeconomic background and special needs of students?

What is the total enrollment in vocational education by OE instructional programs?

How many urban, suburban and rural students are being served by vocational education?

What is the enrollment in vocational education youth groups by organization?

What is the enrollment in vocational education by type of school?

How many disadvantaged (handicapped) students are served by vocational education?

What is the enrollment by parts of the Vocational Education Act?

What is the enrollment in special programs, i.e., pre-vocational, pre-postsecondary and remedial?

What is the total enrollment in pre-service (in-service) vocational teacher training?

## How Much Is Expended for Vocational Education?

### Expenditure Information

What are the total expenditures by states and localities for vocational education?

What is the total expenditure for vocational education from federal, state and local sources?

What is the expenditure for vocational education by function or purpose of the expenditures, e.g., instruction, instructional support, administration, student support services, or community support?

What is the expenditure for vocational education by object of expenditure, i.e., salaries, fringe benefits, purchased services, land, buildings, equipment, materials and supplies?

What is the expenditure for vocational education by geographic location, program area, program level and target groups?

What is the expenditure for vocational education by specific OE instructional programs?

What is the per pupil expenditure for vocational education by geographic location, program area, program level and target groups?

What proportion of VEA funds allocated to states is expended in state administrative overhead?

What is the expenditure for vocational education by specific activities, i.e., teaching, administration, counseling and guidance, planning, evaluation, research and demonstration, data processing, and curriculum development?

What is the expenditure for vocational education by type of school?

What is the expenditure for vocational education by parts of the Vocational Education Act?

What is the expenditure for new vocational education programs?

What is the expenditure for cooperative, work study and work exploration programs?

What is the expenditure for pre-service and in-service training of vocational education professionals?

What is the total expenditure for state advisory council operations?

## What Vocational Education Programs Are Provided?

### Program Information

What OE instructional programs are being provided by geographic location, program type, program level and target groups?

What programs are being offered by age group, grade level and special student needs?

What vocational education programs are offered by type of school?

What programs are offered by parts of the Vocational Education Act?

What and how many new programs are begin implemented?

How are vocational programs accredited?

What methods of instruction are used?

How are vocational education programs evaluated?

How often are vocational education programs evaluated?

How many vocational education programs are terminated?

What are the admission requirements of vocational education programs?

How are program advisory committees selected?

What functions do program advisory committees serve?

For what occupations are vocational programs provided?

What is the geographic accessibility of vocational education programs to public transportation?

## What Vocational Education Staff Resources Are Provided?

### Staff Information

What is the total number of vocational education staff employed by geographic location, program area, program level and target groups?

What is the total number of vocational staff who are classified as educational professionals?

What is the total number of vocational education staff by staff assignment, i.e., administrator, teacher, supervisor, director, coordinator, guidance counselor, secretary/clerk, maintenance?

What are the credentials for vocational education professionals?

How many vocational professionals are employed by OE instructional programs?

What is the total number of vocational staff employed by type of school?

What is the total number of vocational education teachers by years of prior vocational education experience and occupational area of previous work experience?

What is the total number of vocational education professionals who have completed in-service training during a specified period?

What is the total number of vocational staff by salary, method of remuneration and employment status?

What is the total number of vocational education professionals by age, sex, ethnicity, formal education, earned degrees, and current activities performed?

What are the educational development needs of vocational education professionals?

What is the turnover rate of vocational education teachers?

What are the reasons for vocational teacher terminations?

## What Vocational Education Facilities Resources Are Provided?

### Site Information

Where are vocational education facilities located?

How are educational sites being used for vocational education purposes?

Who owns the sites used for vocational education?

When were the sites acquired?

How were the sites acquired, i.e., purchase, gift, lease, rental?

What is the acquisition and present value cost of vocational educational sites?

What is the size of vocational education sites?

How many buildings are on the sites?

### Building Information

What is the square footage of the buildings devoted to vocational education by type of use?

What percentage of total capacity is allocated to vocational education?

What is the acquisition and present value of buildings used for vocational education?

What is the average size and student capacity of classrooms, shops and special rooms devoted to vocational education?

What is the condition of buildings housing vocational education programs?

How many student stations are allocated to vocational education?

What is the condition of the rooms used for vocational education purposes?

How many student stations are provided by OE instructional programs?

What is the average daily number of students who make use of rooms?

What percentage of the day are rooms used for vocational education?

What fixed (movable) equipment is provided for use in vocational education?

When was the equipment acquired?

What is the condition of the equipment?

What is the acquisition cost and the current value of equipment used in vocational education?

How was the equipment acquired, i.e., purchased new, loan, rental, leased?

How much and what kind of equipment is available for data processing, research and statistical services, student personnel services?

## Product

### What Is the Output from Vocational Education Programs?

#### Completion Information

What is the total number of program completers by geographic location, program area, program level and target groups?

What is the total number of program completers by OE instructional programs?

What is the total number of program completers by type of school?

What is the completion rate by geographic location, program area, program level and target groups?

What is the completion rate by OE instructional programs?

What is the completion rate by type of school?

What are the education and career intentions of program completers?

What is the achievement level of program completers?

Withdrawal Information

What is the total number of early leavers by geographic location, program area, program level and target groups?

What is the total number of early leavers by student characteristics (age, sex, race, grade level, etc.)?

What is the total number of early leavers by OE instructional programs?

What is the total number of early leavers by type of school?

What is the total number of early leavers by reason for early leave?

What are the education and career intentions of early leavers?

What is the achievement level of early leavers?

## Impact

### What Is the Result of Vocational Education Programs?

Post-School Employment Information

What is the total number of program leavers who are employed full-time (part-time) by geographic location, program area, program level and target groups?

What is the total number of program leavers who are unemployed and available for work by geographic location of program, program area, program level and target groups?

What is the proportion of program leavers who are employed by OE instructional programs?

What is the total number of program leavers who are employed in related areas by geographic location of programs, program area, program level and target groups?

What is the current salary or wages for employed program leavers by geographic location of programs, program area, program level and target groups?

What is the current wage (salary) for program leavers by OE instructional program, age, sex, race and completion status?

What has been the career progression since leaving a vocational program?

Job Satisfaction Information

How satisfied are program leavers with their current job in terms of wages, working conditions, type of work and potential for advancement?

How does job satisfaction differ by geographic location, program area, program level and target groups?

How does job satisfaction differ by OE instructional programs?

How does job satisfaction differ by type of school?

How relevant is the vocational education program in terms of skills required on the current job and equipment used on the current job?

How does job satisfaction differ by age, race, and sex of program leavers?

Employer Satisfaction Information

How satisfied are employers with vocational program leavers according to quality of work, quantity of work, need for on-the-job training, and potential for advancement?

How does employer satisfaction differ by geographic location of programs, program area, program level and target groups?

How does employer satisfaction differ by OE instructional programs?

How does employer satisfaction differ by type of school?

School Satisfaction Information

How satisfied are program leavers with school instruction, personnel, facilities and placement activities?

How does school satisfaction differ by geographic location, program area, program level and target groups?

How does school satisfaction differ by OE instructional programs?

How does school satisfaction differ by type of school?

How does school satisfaction differ by age, race, and sex of program leavers?

## Context-Input Relations

### What Is the Relation Between Community Need and Resources Allocated to Vocational Education?

#### Population Information, Employment Information, Education Information, Economic Information and Revenue Information

Are vocational education revenues allocated according to community need?

What is the relation between the extent of community support for education and the amount of state and local revenue generated for vocational education?

What is the relation between the socioeconomic level of the community and the characteristics of vocational education enrollees?

## Context-Process Relations

### What Is the Relation Between Community Need and Support and the Process of Vocational Education?

#### Population Information, Employment Information, Education Information, Economic Information and Enrollment Information

What is the relation between community need and the number of people who apply for admission to vocational education programs?

What is the relation between community need and the number of enrollees in vocational education programs?

What is the relation between community need and expenditures for vocational education?

What is the relation between community need and the vocational programs provided?

What is the relation between community need and the vocational staff resources provided?

What is the relation between community support and expenditures for vocational education, programs provided, staff provided and facilities provided?

## Context-Product Relations

### What Is the Relation Between Community Need and Support and the Output of Vocational Education Programs?

#### Population Information, Employment Information, Education Information, Economic Information and Completion and Withdrawal Information

What is the relation between community need for vocational education and the number of completers?

What is the relation between community need for vocational education and the number of early leavers?

What is the relation between community need and the educational and career intentions of program completers and early leavers?

What is the relation between community support and the rate of program completion?

What is the relation between community support and the rate of early leaving?

## Context-Impact Relations

### What Is the Relation Between Community Economic Conditions and Post-School Outcomes?

#### Employment Information, Economic Information, Post-School Employment Information, Job Satisfaction, Employer Satisfaction and School Satisfaction

What is the relation between the placement rate of program completers and the number of job openings, the total unemployment rate, the unemployment rates of youth and the size of the labor force?

What is the relation between employment of program completers in related areas and the total unemployment rate, number of job openings, unemployment rate of youth, size of the labor force and local labor supply?

What is the relation between job satisfaction and economic conditions?

## Input-Process Relations

### What Is the Relation Between the Amount of Revenue Allocated and the Vocational Resources Provided?

#### Revenue Information, Enrollment Information, Expenditure Information, Program Information, Staff Information, and Facilities Information

What is the relation between the amount of revenue allocated to vocational education and the number served by vocational education?

What is the relation between the amount of revenue allocated to vocational education and the quality and quantity of vocational education staff?

What is the relation between the amount of revenue allocated to vocational education and the breadth and scope of vocational education programs offered?

What is the relation between the amount of revenue allocated to vocational education and the instructional quality of vocational education programs?

What is the relation between the amount of revenue allocated to vocational education and the quantity and condition of vocational education property, buildings and equipment?

What is the relation between the amount of revenue allocated to vocational education and the utilization of vocational education resources?

## Input-Product Relations

### What Are the Input-Output Relations in Vocational Education?

#### Revenue Information, New Student Information, Completion Information, and Withdrawal Information

What is the relation between the amount of revenue allocated to vocational education and the number of program completers?

What is the relation between the amount of revenue allocated to vocational education and the number of early leavers?

What is the difference between the pre- and post-program career expectations and aspirations of program leavers?

What is the difference between pre- and post-program achievement levels of program leavers?

## Input-Impact Relations

### What Is the Relation Between Revenue Allocated to Vocational Education and the Results of Vocational Education?

#### Revenue Information, Post-School Employment Outcome Information, Job Satisfaction, Employer Satisfaction, and School Satisfaction

What is the relation between the revenue allocated to vocational education and the employment status of program leavers?

What is the relation between the revenue allocated to vocational education and the job satisfaction of program leavers?

What is the relation between the revenue allocated to vocational education and employer satisfaction with program leavers?

What is the relation between the revenue allocated to vocational education and the school satisfaction of program leavers?

## Process-Product Relations

### What Is the Relation Between the Process and the Product of Vocational Education?

#### Enrollment Information, Expenditure Information, Program Information, Staff Information, Facilities Information, Completion Information and Withdrawal Information

What is the relation between the amount expended for vocational education programs and the number of program completers and early leavers?

What is the relation between the amount expended for vocational education and the achievement levels of program leavers?

What is the relation between the characteristics of vocational programs and the completion rate?

What is the relation between the characteristics of vocational programs and the educational and career intentions of program completers?

What is the relation between the characteristics of vocational staff and the number and rate of program completions?

What is the relation between the quantity and quality of vocational property and equipment and the number and rate of program completions?

## Process-Impact Relations

### What Is the Relation Between Vocational Education Process and Post-School Outcomes?

#### Expenditure Information, Program Information, Staff Information, Facilities Information, Post-School Employment Information, Job Satisfaction and School Satisfaction

What is the relation between the amount of expenditures for vocational education and the employment status of program leavers?

What is the relation between the amount of expenditures for vocational education and the employer satisfaction with program leavers?

What is the relation between the amount of expenditures for vocational Education and the school satisfaction of program leavers?

What is the relation between program characteristics and the employment status of program leavers?

What is the relation between program characteristics and program leavers' satisfaction with school (job)?

What is the relation between program characteristics and employer attitudes regarding program leavers?

What is the relation between vocational staff characteristics and the employment status of program leavers?

What is the relation between staff characteristics and school (job) satisfaction of program leavers?

What is the relation between characteristics of vocational facilities and the employment status of program leavers?

What is the relation between characteristics of vocational facilities and the job (school) satisfaction of program leavers?

What is the relation between characteristics of vocational facilities and employers' attitudes regarding program leavers?

## Product-Impact Relations

### What Is the Relation Between the Product of Vocational Education and the Post-School Results (Outcomes)?

#### Completion Information, Withdrawal Information, Post-School Outcomes, Job Satisfaction, Employer Satisfaction and School Satisfaction

What is the difference in post-school employment outcomes of program completers and early leavers?

What is the difference in job satisfaction of program completers and early leavers?

What is the difference in employer satisfaction with program completers and early leavers?

What is the difference in school satisfaction of program completers and early leavers?

## TYPES OF INFORMATION CURRENTLY AVAILABLE AND SOON TO BE AVAILABLE TO VOCATIONAL EDUCATION PLANNERS THROUGH EXISTING VOCATIONAL EDUCATION MANAGEMENT SYSTEMS

### Currently Available

The following is a list of some exemplary elements of descriptive data available in vocational education, given the present state-of-the-art. It is currently within the operational capacity of at least one vocational education management system in the nation to:

list, by individual school, all programs and curricula approved by a state vocational education agency, with date of approval.

indicate, by program area, what new curricula were approved for the first time in the past year, in what numbers, and with what resulting increase in enrollments.

provide district/institutional/school levels of informational data of the following kinds:

the organization of schools within districts, districts within planning units, planning units within counties, counties within intermediate units, and intermediate units within labor markets;

aggregate data on student enrollments in academic, general, and vocational programs for planning units, intermediate units, and state regions; and

aggregate data on number of disadvantaged and handicapped students for planning units, intermediate units, and state regions.

identify aggregate vocational program enrollment data by regional and state totals, by grade levels, by sex, race, and by handicapped and disadvantaged students.

provide aggregate data on vocational program completers or dropouts by sex, race, disadvantaged or handicapped for the state as a whole, as well as administrative areas, e.g., counties, labor markets, intermediate units, and regions.

describe trends in absolute and relative statistics over a period of years in vocational program enrollments, outputs, terminations, and transfers.

identify for each school and school district, administrative and teaching personnel servicing secondary, adult, and postsecondary vocational programs by curricula.

provide a personnel profile on teachers, by full- and part-time designation, length of service, race, sex, age, educational qualifications, mean and median monthly and annual salaries, year of certification, years of teaching and non-teaching experience, terminations, and continuations.

forecast replacement needs of vocational teachers by number, type, and time period.

calculate reimbursements for:

secondary vocational education curricula, based upon student ADM data reported by schools;

vocational education-related travel;

adult/postsecondary teachers; and

administrative personnel servicing adult/postsecondary programs.

present follow-up information on vocational education program graduates by school, educational level, region, program field, race, sex, type of curriculum, number and percentage pursuing further education, military service, or other state of not being available for employment, number and percentage placed in and out of field of study, number and percentage unemployed and looking for work, earnings, and length and number of job occupancies.

present five-year trend analyses of follow-up data.

provide aggregate data for each occupational curriculum, forecasting for the next school year enrollment increases, total enrollment, total new enrollment, and total enrollment lost through termination, by planning units.

develop annually, statewide and by planning regions, the best available information on:

manpower demand, by seven-digit DOT code and by occupational cluster;

trained manpower supply, including those applicants registering through Employment Security and those from secondary, postsecondary, adult, and other federally funded training program sources; and

resultant net manpower requirements by subtraction of total supply from total demand, and rank ordering the results by statewide totals for program planning purposes.

## Anticipated To Be Available

It is realistically expected that, within the immediate future (i.e., the current fiscal year), the state-of-the-art will be able to:

provide basic descriptive data for each curriculum at each school location by objective, duration, class hours, class schedule, entry requirements, advisory committee, etc.

compute for some curricula by school location, basic facility descriptive information, e.g., basic pupil capacity, square feet of space, year built, initial cost of facilities, years since last renovation, ratings of equipment adequacy, original equipment cost, current ratings and estimated cost of updating.

describe facility utilization by percentage of total available hours, and percentage of total pupil capacity, by program area and educational level.

provide specific employer information by name of employer, industry, and number of vocational graduates hired in and out of field of training.

provide for each school and curriculum, the total annual curriculum operating expense, cost per pupil enrolled, percentile rank of cost per pupil enrolled for similar curricula, and basic curriculum cost breakdown by indirect cost changes, teaching staff, materials, supplies, etc.

provide mean and median total expenditures within and across curricula, statewide averages, and trend data for curricula operating costs, as well as component costs.

report total cost per graduate, total cost per graduate entering employment, and total cost per graduate employed in the field for which trained.

## EPILOGUE

The specific questions we have identified in this report are primarily accounting-type questions. That is, the questions deal with a descriptive account of what has already occurred with respect to students served, dollars spent, programs available, facilities provided and post-school outcomes. The utility of accounting-oriented information is that it allows an assessment of the current state of vocational education in terms of concrete, quantifiable measures such as dollars and numbers. Exactly how the answers to these specific questions are pieced together to answer the more complex questions asked by Congress and others remains to be determined.

The limitation of accounting questions is that they are not future-oriented and, as such, are not of immediate benefit to planners. Exploration of alternative futures is more generally the purview of simulation and other types of projection models. However, we believe that a capability for the gathering and processing of data descriptive of the current state of vocational education is a necessary prerequisite for the development of the capability to predict alternative states. It is for this reason that answers to the questions concerning the relation between context, input, process, product and impact are of critical importance. It is only to the extent that the relationship between, say, expenditures in vocational education and program completions is known that the question, "What would be the future effect of an increase in vocational expenditures?" can be answered. Unfortunately, of all the specific questions posed in the preceding pages, least is known regarding these interrelationships.

Some states have relatively advanced vocational information systems, as evidenced by the capabilities listed in our review. However, there are serious problems regarding the use of existing state systems to provide information on the current and anticipated progress of the total vocational education enterprise. Briefly, the problems as we see them are:

1. There is no generally acceptable way to compare data across state systems.

2. There are questions of "federal intrusion" in states' rights to provide educational data.

3. Definitions of many aspects of vocational education vary from state to state.

4. Separation existing between secondary and postsecondary vocational education inhibits the aggregation of data.

5. Scope and fidelity of information capabilities vary widely across states.

6. Local autonomy has resulted in wide variability in information gathering capabilities within states.

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